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ABSTRACT

This paper presents three studies dealing with the use of attribution theory in the study of sex differences in achievement. These sex differences are measured in terms of task difficulty, ability, effort, and luck according to the model developed by Weiner, et al (1971). The studies attempt to expand the Weiner model to demonstrate that males and females differ in their attributions about the successful or unsuccessful outcomes of others, and that these sex differences in attribution encourage male achievement and discourage female achievement. The first study indicates that females explain successful outcomes in terms of internal, stable causes while males explain unsuccessful outcomes in terms of unstable, acquired causes. By scaling the reasons given for successful and unsuccessful outcomes, the second study indicates that females emphasize interpersonal conflict reasons more than males in assigning similarity ratings to the causes for unsuccessful outcomes. By measuring attributions with the four Weiner et al (1971) causal elements, the third study indicates that females use luck more often than males as a reason for success and that males, not females, understand the causal connection between effort and task difficulty. This paper interprets the results as an indication that attributional biases of females in explaining the outcomes of others are less conducive to achievement than the biases of males. (HLM)

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Attributional Biases: More Barriers to Women's Achievement

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Several investigators have established the value of attribution theory in the study of sex differences in achievement (Deaux, 1976; Frieze, 1975). In general, research in this area has focused on one of two topics. The first concerns the subjects' explanations for the outcomes of others and the second involves the explanations of subjects for their own outcomes. In all of this research, the measurement of achievement attributions has been based on the Weiner, Frieze, Kukla, Rest, and Rosenbaum (1971) model. Therefore, sex differences in achievement attributions have been measured in terms of task difficulty, ability, effort, and luck.

Currently, there are several published studies which have compared the explanations given by subjects for identical achievements obtained by male or female actors. These studies (Deaux & Emswiller, 1974; Etaugh & Brown, 1975; Feldman-Summers & Kiesler, 1974) have come up with similar results. At tasks typically performed by males, female success is attributed to unstable causes, such as greater effort or luck. In contrast, male success is attributed to stable causes, such as greater ability or skill. Furthermore, in all three studies no main effects for sex of subject was found. Male and female subjects exhibit this same pattern of attributions. Clearly, this attributional bias which favors unstable causes for female success and stable causes for male success would result in a lower expectation about the continued success of women. This lowered expectation could easily have negative consequences for the evaluation and promotion of females who are in traditionally male occupations. Thus, this attributional bias provides yet another potential barrier to the achievement of women.

Unfortunately for women, a comparable attributional bias is also found in the attributions that females make about their own outcomes (Nicholls, 1975; Bar-Tal & Frieze, Note 1; Deaux & Farris, Note 2). When explaining their own success, females are more likely to use unstable causes, such as luck or effort; while males are more likely to use stable causes such as ability. When explaining their own unsuccessful outcomes, females prefer stable explanations; while males prefer unstable ones. This attributional bias would have the behavioral effect of accelerating the achievement of males and inhibiting the achievement of females. Thus, the attributional biases that females have in explaining their own outcomes represent another barrier to the achievement of women.

This paper represents an extension of the attributional approach to the study of sex differences in achievement attributions. The research reported here is not limited to the Weiner et al. (1971) conceptualization of achievement attributions. An attempt to obtain an open-ended and therefore, larger set of attributions for successful and unsuccessful outcomes is made in two of the three studies reported in this paper. By using this expanded method of attribution measurement, these studies aim to demonstrate that female and male observers differ in their attributions about the successful or unsuccessful outcomes of others. Furthermore, it is expected that these sex differences in explanations will be of a type that encourage continued male achievement and discourage female achievement.

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Study One

Previous research has failed to find main effects for the sex of observer in achievement attributions. However, this lack of sex differences could be the result of measuring only the four causal domains of Weiner et al's (1971) model. In addition, this could be caused by the specific stimuli used in these previous studies. Thus, in addition to using an open-ended measure of achievement attributions, the outcomes to be explained in Study One cover successful and unsuccessful outcomes in a broad range of jobs.

Procedure

To fulfill course requirements, 226 undergraduates (130M, 96F) participated in a one-hour experiment entitled "Explaining Achievement Outcomes." During one-third of the session, students were requested to "list the words or phrases which are reasons why _____ (one of 12 nouns) are _____ (successful or unsuccessful) at getting their job done." Ten of these nouns represented diverse job categories. The other two were "people" and "student." Each student was presented with one of the 24 (12 nouns by two outcomes) possible stimuli. The remainder of the session was devoted to administering two separate Adjective Check Lists (Gough and Heilbrun, 1965) During the first administration the students were asked to describe themselves. The instructions for the second administration of the Adjective Check List (ACL) asked the students to describe their ideal selves.

Results

Analysis of the 2495 reasons generated by the subjects resulted in the observation that only 23% of the total number of reasons could be classified as one of the Weiner et al.'s (1971) four causal elements. Effort constituted 13%, ability constituted 8%, task difficulty 1%, and luck, less than 1%.

Consistent with the attributional bias described by Jones and Nisbett (1971), only 4% of the reasons could be classified as external or situational.

The reasons were grouped together on the basis of having the same meaning. The groupings which were cited the most frequently across the twelve nouns were skill (including knowledge, training, experience), self-controlling dispositions (such as organized, dependable, conscientious), motivation (hard work, determination, persistence), ability (talent, intelligence), external rewards (money, acclaim), and personal rewards (self-satisfaction, enjoyment). The frequencies of reasons within each of these six categories underwent a Chi-square analysis which compared the citing of these reasons by males and females for successful and unsuccessful outcomes. Of the six two by two Chi-squares, two yielded significant, and one a near significant difference.

In terms of the number of skill reasons, females were found to use skill more frequently as an explanation for success; while, males used skill more often to explain unsuccessful outcomes, χ^2 (1) = 9.65, $p < .01$. Females listed a disproportionate number of self-control reasons for success, χ^2 (1) = 7.71, $p < .01$. Females also reported motivation as an explanation for an unsuccessful outcome less frequently than did males, χ^2 (1) = 3.23, $.05 < p < .10$. There were no differences between males and females in the

number of abilities, external rewards, or personal rewards reasons listed for successful or unsuccessful job outcomes.

A two by two (Sex by Outcome) analysis of variance was conducted on a count of the number of reasons listed by each subject. No significant main effects or interactions were found.

Another analysis of variance (Sex by Outcome by Sex-typed Noun) was conducted on the total number of reasons. There were no main effects and only one interaction of borderline significance. This interaction was between Outcome and Sex-typed Job Title, $F(2,101) = 2.78$, $p < .067$. The means indicated that there were fewer reasons cited for success at a typically female task (in this case, housewife and clerical) than at neutral tasks (people and student) or male-typed tasks (outdoor and professional occupations).

Discussion

The results overall support the expectation that male and female observers explain successful and unsuccessful outcomes differently. Females were more likely to list reasons such as being orgainzed and having the appropriate training as the causes of successful outcomes; while males listed reasons such as lacking motivation and the appropriate training for unsuccessful outcomes. According to theory, both skill and self-control traits are stable and internal attributions. Since these are the only reasons which yielded sex differences in successful outcomes and since females list them more frequently than males, then one could conclude that females understand successful outcomes as caused more by internal and stable causes than males. While this may be a correct interpretation for the possession of self-control traits, skill, while stable, is nonetheless an acquired trait. This has important consequences for males who use skill more often than females in explaining unsuccessful outcomes. Lack of skill as a cause for an unsuccessful outcome is an explanation that would probably not lower achievement striving because one can always acquire the training requisite for the job. Likewise, males are more likely to use lack of motivation, an internal, but unstable attribution for unsuccessful outcomes. Thus, males more readily than females explain unsuccessful outcomes in terms of changeable causes. This attributional bias in explaining outcomes could effect the achievement strivings of males and females. If males see the causes of unsuccessful outcomes as more changeable, they would be more likely than females to persist in the face of failure.

Study Two

In an effort to refine the simple grouping of reasons used in Study One, the second study undertook a six step procedure that led to a nonmetric multidimensional scaling of the reasons given for successful and unsuccessful outcomes.

Procedure

Step 1: - The 2495 reasons were grouped together according to identical meaning. Separate judges grouped the successful and unsuccessful outcomes. Only those reasons which were listed by at least five different subjects were included in the next step.

Step 2: Thirty-seven different reasons for successful and forty-one reasons for unsuccessful outcomes satisfied the frequency criteria of Step 1. Students in a experimental psychology class (N = 54) were asked to rate these reasons (on a seven point scale) in terms of their importance as possible causes of success or failure outcomes. Two separate orderings for success or failure outcomes were made on the basis of their mean importance ratings. The 78 reasons and their mean importance ratings are listed in Tables 1 and 2.

Step 3: The eight members of the psychology honors class were asked to group together the 78 reasons on the basis of similarity in meaning. The reasons for the successful and unsuccessful outcomes were grouped together separately.

Step 4: Combining the information obtained in Steps 2 and 3, the 37 and 41 reasons were reduced to 20 for each outcome. Basically the reduction was the result of combining synonyms and eliminating reasons that were considered relatively unimportant. These 40 reasons represented all of the meaning content of the most important reasons for successful and unsuccessful outcomes.

Step 5: The reasons were placed on two symmetrical matrices. One matrix contained all the reasons for successful outcomes and the other contained the reasons for unsuccessful outcomes. With the successful outcomes matrix, 21 (11M, 10F) undergraduates rated the similarity of each of the reasons as compared to every other on a scale from 1 to 10. Twenty-one (10M, 11F) other undergraduates did the same with the reasons for unsuccessful outcomes. These ratings of similarity were analyzed by use of a nonmetric multidimensional scaling analysis called ALSCAL (Takane, Young, & de Leeuw, Note 3). This analysis includes an individual difference model and is based on an alternating least squares method. For both successful and unsuccessful outcomes, the ALSCAL analysis reached an optimal solution with four dimensions. The SStress (.36) and Stress (.23) for the successful and the SStress (.37) and Stress (.23) for the unsuccessful outcomes indicate a relatively good fit. The location of the 20 reasons for successful and unsuccessful outcomes is presented in Tables 3 and 4.

Step 6: In order to interpret the meaning of these four dimensions, the individual weights for the four dimensions were correlated with the self and ideal self ratings on the ACL raw scores. All 42 subjects had also participated in Study One and therefore their ACL ratings for self and ideal self were available. The individual weights indicate the degree to which each subject's judgments of similarity are represented by the overall solution (presented in Tables 3 and 4) Significant and positive correlations between ACL scores and individual weights would roughly mean that people who scored high on a particular ACL scale place more emphasis on a particular dimension.

Results

Successful Outcomes

The first dimension ranges from competitiveness at the most positive extreme to calmness at the most negative extreme (see Table 3). Correlations with the ACL ratings yielded two significant relationships. People who emphasized the first dimension scored higher on the self-control (r = .66) and intraception (r = .46) scales of the ideal self ACL ratings. These results suggest that this dimension represents the calculated pursuit of achievement.

The second dimension has at the most positive extreme ability and at the most negative extreme self-satisfaction. The individual weights for this dimension were positively correlated with the self-confidence (r = .42) and dominance (r = .44) scales of the self ratings and negatively correlated with the number of unfavorable adjectives checked (r = -.47) in the ideal self ratings. This dimension appears to represent appreciation of one's own ability.

At the most positive extreme of the third dimension is concentration and ambitions is at the most negative end. Individual weights on this dimension were correlated negatively with the endurance (r = -.54) and order (r = -.47) scales of the self ratings and with the self-control (r = -.59) scale of the ideal self ratings. These correlations indicate that those who rate themselves as not very persistent or organized and who rate their ideal self as lacking conscientiousness emphasize this dimension more than people with the reverse traits. Thus, people who lack these qualities emphasize this dimension more in their ratings of similarity. This dimension probably represents the organized industriousness aspect of achievement.

Dimension four ranges from takes responsibility at the most positive end to interest at the most negative end. The ACL correlations with individual weights yielded five positive correlations with ideal self ratings. People who emphasized this dimension scored higher on the defensiveness (r = .45), personal adjustment (r = .45), affiliation (r = .45), heterosexuality (r = .48), and exhibition (r = .60) scales. These results suggest that this dimension represents the leadership aspects of achievement.

Unsuccessful Outcomes

The first dimension has at the positive extreme no advancement and at the negative end health (see Table 4). Individual weights are negatively correlated with total number checked (r = -.43) for self ratings and total number checked (r = -.48), affiliation (r = -.51), and heterosexuality (r = -.54) for the ideal self ratings. This means that people who have less interest in interacting with others (of same or opposite sex) and who lack surgency and drive emphasize this dimension more than people with the opposite traits. This dimension appears to represent the lack of opportunity, drive or energy reasons for unsuccessful outcomes.

The second dimension has at the positive extreme nervousness and at the negative end apathy. Correlations with ACL ratings yielded only one significant correlation. People who scored higher on self ratings of defensiveness (r = .48) emphasized this dimension more than people who score low. These results suggest that this dimension could be interpreted as representing anxiety versus lack of concern aspects about how others will perceive the individual.

At the positive end of dimension three is located lack concentration and at the negative end is located doesn't get along with others. The correlations yielded ten significant relationships. With the self ratings, there were positive correlations with the succorance (r = .54) and counseling readiness (r = .52) scales and with the ideal self ratings, the positive correlations were with the personal adjustment (r = .54), intraception (r = .59), nurturance (r = .59), abasement (r = .59), and counseling readiness (r = .51). The negative correlations were with ideal self ratings of exhibition (r = -.64), autonomy (r = -.56), and aggression (r = -.60). These results mean that people who are interpersonally adjusted, solicit and give sympathy, attempt to understand their own and others behavior, express feelings of inferiority, and who would benefit most from counseling, emphasize this dimension. Also, people who rate their ideal self in terms of high needs for exhibition, aggression, and autonomy emphasize this dimension less than people whose ideal self ratings reflect lower amounts of these needs. In view of this information, a possible interpretation of this dimension is that it represents interpersonal conflicts that lead to unsuccessful outcomes.

The fourth dimension ranges from lack of knowledge at the positive end to dislike of job at the negative end. Two correlations with ideal self ACL ratings were significant. These indicate that people who checked more unfavorable adjectives (r = .43) and people who scored high on the self-confidence (r = .42) emphasized this dimension more. A possible interpretation of this dimension is that it prepresents a lack of confidence about one's abilities in general and specifically about one's abilities at a certain task.

Note that none of the individual weights for the eight dimensions were significantly correlated with the need for achievement scale of the ACL.

Sex Differences

Two one-way analyses of variance were conducted on the individual weights for the dimensions of reasons for successful and unsuccessful outcomes. The independent variable was sex.

With the reasons for successful outcomes, one sex difference of borderline significance was obtained with the fourth dimension, F (1,20) = 3.43, .05 < p < .10. A comparison of the means indicate that females emphasize the fourth dimension more than males.

With the reasons for unsuccessful outcomes, one significant sex difference was found in individual weights for dimension three, F (1,20) = 4.76, p < .05. A comparison of the means indicated that females emphasize the third dimension more than males.

Discussion

These sex differences in individual weights mean that males and females have different judgments of the meaning of the reasons for successful and unsuccessful outcomes and this difference lies in the fourth dimension of reasons for successful outcomes and the third dimension of reasons for unsuccessful outcomes. Females emphasize the leadership reasons about successful outcomes (dimension four) and the interpersonal conflict reasons about unsuccessful outcomes (dimension three).

Study Three

The third study was designed to determine if sex of observer effects the type of attributions made about the outcomes of others. In this study, the attributions measured were limited to the four Weiner et al (1971) causal elements.

Procedure

An experiment modelled after Experiment VI of Weiner and Kukla (1970) was administered to 144 undergraduates (72M, 72F). Each subject was asked to explain the cause of one success or failure outcome at a task which had been successfully or unsuccessfully completed by 10%, 50%, or 90% of the other people who had tried it. Subjects were asked to "estimate the extent to which the person's performance was due to each of the following:" Four Likert type scales followed representing the Weiner et al (1971) causal elements.

Results

An anlysis of variance (Norm X Outcome X Level X Sex) was conducted with the four rating scales as dependent variables.

Manipulation Checks: The results replicate those of Weiner and Kukla (1970). Norm and Level interacted significantly, $F(3, 140) = 4.06$, $p < .02$, for the ability attributions. Like Weiner and Kukla, the means of this interaction indicated that attributions to ability increased as the task became more difficult and attributions to lack of ability increase as the task became easier. Norm and Level interacted also for task difficulty attributions, $F(3, 140) = 5.80$, $p < .004$. Attributions to task difficulty increased as the task became more difficult and decreased as the task became easier.

Sex Differences: One significant Sex main effect and one interaction with Sex were obtained. Females were more likely to explain outcomes as due to luck than were males, $F(1, 142) = 8.66$, $p < .004$. Sex interacted with Norm Statements and Level, $F(11, 132) = 4.74$, $p < .01$. An examination of the means indicate that males emphasize effort more as the level of task difficulty increases. The mean effort ratings made by females does not vary as a function of task difficulty.

Discussion

The results suggest that males and females explain the outcomes of others differently. Regardless of outcome or level of task difficulty, females were more likely to attribute outcomes to luck than were males. This suggests that females are more likely than males to regard outcomes as caused by external, unstable, and therefore, uncontrollable factors.

Furthermore, males and females made different attributions as a function of task difficulty. Males placed more emphasis on effort as the task became more difficult. However, females did not vary their effort attributions as a function of task difficutly. This result suggests that males understand the causal connection between difficult tasks and trying hard; while females do not.

Summary and Conclusions

The three studies presented in this paper succeeded in demonstrating sex differences in the use and/or understanding of achievement attributions. Study One demonstrated that females explain successful outcomes in terms of internal, stable (albeit, acquired) causes; while males explain unsuccessful outcomes in terms of unstable and acquired causes. Study Two demonstrated sex differences in judgments about the meaning of causes for unsuccessful and successful outcomes. Females emphasize the interpersonal conflict reasons more than males in assigning similarity ratings to the causes for unsuccessful outcomes. Finally, Study Three demonstrated that females are more likely to use luck as an explanation for outcomes than are males. Furthermore, males and not females demonstrated an understanding of the causal connection between effort and level of task difficulty.

One interpretation of these results is that the attributional biases of females in explaining the outcomes of others are less conducive to achievement than are the biases of males.

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Table 1

Reasons for Successful Outcomes: Mean Importance Ratings

Relating to previous pilot data collected here (then more systematically gathered elsewhere) we are concerned with what people perceive to be causes for success or failure. Given below is a list of words related to success and on the following page a list of words for failure (lack of success). We would like you to rate each word on a scale of 1 to 7 for the degree of importance which you would attribute to each of the possible causes for why people might generally be successful or unsuccessful at various undertakings. Put a number from 1 to 7 in front of each word.

1 = Definitely not important
2 = Not very important
3 = Probably not important
4 = Of questionable importance
5 = Probably important
6 = Very Important
7 = Definitely very important

MEAN RATINGS FOR POSSIBLE CAUSES FOR SUCCESS

6.37 1. Ability
6.34 2. Desires achievement
5.93 3. Competitive
5.39 4. Concentration
4.46 5. Calm
5.93 6. Determination
4.89 7. Enjoyment
5.18 8. Efficient
4.79 9. Experienced
5.41 10. Goal Oriented

4.69 11. Good conditions
5.39 12. Hard work
4.89 13. Helpful
5.48 14. Interest
5.47 15. Intelligent
5.39 16. Knowledgeable
4.15 17. Desires Money
4.64 18. Meaningful cause
6.11 19. Motivated
4.48 20. Organized

5.39 21. Persistent
4.22 22. Pressure
5.11 23. Responsible
4.44 24. Wants rewards
5.44 25. Self satisfaction
5.61 26. Desires Success
4.90 27. Trained
5.97 28. Ambitious
5.69 29. Aggressive
5.09 30. Dependable

5.83 31. Desire
5.39 32. Energetic
4.46 33. Friendly
5.15 34. Leadership
5.43 35. Industrious
3.37 36. Neat
3.44 37. Loves Nature

Table 2

Reasons for Failure Outcomes: Mean Importance Ratings

1 = Definitely not important
2 = Not very important
3 = Probably not important
4 = Of questionable importance
5 = Probably important
6 = Very Importan
7 = Defini

MEAN RATINGS FOR POSSIBLE CAUSES FOR FAILURE	
5.88	1. Apathy
5.36	2. Lack ability
5.19	3. Bored
4.48	4. Poor conditions
5.10	5. Lack confidence
4.48	6. Doesn't get along with others
4.42	7. Conflict of interests
5.28	8. Dislike job
5.01	9. Distracted
4.63	10. External, environmental factors
5.93	11. Don't care
5.66	12. Lack interest
5.02	13. Lack intelligence
4.95	14. Confused about job
5.50	15. Lazy
5.59	16. Lack goal
5.28	17. Lack motivation
4.26	18. Nervous
4.49	19. Inadequate pay
5.15	20. Personal problems
4.46	21. Pressure
4.72	22. Lack organization
4.50	23. Too much work
4.87	24. Lack training
4.43	25. Tired
5.20	26. Health
4.63	27. Lack time
5.28	28. Waste time
4.94	29. No advancement
4.48	30. Lack equipment
4.91	31. Lack communication
5.41	32. Lack concentration
5.30	33. Careless
4.65	34. Competition
4.17	35. Dishonest
4.81	36. Lack experience
4.44	37. Injuries
4.36	38. Lack help
5.19	39. Lack skill
5.31	40. Lack knowledge
4.80	41. Lack education

Table 3
Successful Outcomes
Stimulus Configuration Derived in Four Dimensions (N = 21)

Reason	Dimension 1	2	3	4
Ability	- .1198	2.1042	- .0744	- .1688
Desire for Achievement	1.0481	.9956	.2333	-1.2123
Determination	1.2680	- .8856	1.1230	.0483
Ambitions	1.0664	- .6666	-1.3298	- .4748
Interest	- .4461	.3478	- .6500	-1.7919
Self Satisfaction	- .7826	-1.1777	-1.1646	- .3173
Goal Orientation	.4698	.1882	-1.0290	-1.4297
Industriousness	.8309	- .2874	1.5996	- .3706
Concentration	- .0373	- .1455	1.9132	- .7718
Knowledge	- .2015	1.9601	- .4661	- .7312
Competitiveness	1.6360	- .0906	- .7707	.5345
Efficiency	.0158	.6171	1.7482	.6501
Leadership	.1418	.3555	- .7483	1.8366
Takes Responsibility	.3455	.3053	- .3655	1.9915
Good Training	- .1466	1.9617	.1072	.6282
Enjoyment	-1.4424	- .5618	- .6833	- .9321
Good Conditions	-1.5826	- .0861	1.2375	- .0585
Wants Rewards	1.2286	-1.2987	- .4572	.5869
Calmness	-1.7617	- .6723	.6120	.8773
Friendliness	-1.5302	- .9720	- .8357	1.1056

Table 4
Unsuccessful Outcomes
Stimulus Configuration Derived in Four Dimensions (N = 21)

Reason	Dimension 1	2	3	4
Apathy	.8797	-1.7153	- .0957	- .6204
Doesn't Get Along With Others	.0496	- .0175	-1.9910	- .6827
Lack Goal	.2511	-1.4571	1.1821	.7489
Laziness	.9042	-1.3045	1.3038	- .2691
Lack Concentration	.8320	.6575	1.6635	.2831
Lack Ability	- .7191	- .3997	.2136	1.9127
Lack Knowledge	- .3241	- .1753	- .1959	2.0447
Carelessness	1.0692	1.1194	1.2366	- .0915
Dislike Job	.4408	- .7040	- .1953	-1.6401
Health	-1.8369	- .8037	.4286	- .2404
Poor Conditions	- .8992	-1.4700	.1904	- .8482
No Advancement	1.4985	- .4801	- .9512	- .1984
Lack Communication	.7873	.1433	-1.6444	.8551
Lack Organization	1.0861	1.0001	1.0709	.5750
Competition	-1.7545	.5474	- .6433	- .8721
Too Much Work	- .8178	1.0254	.5153	-1.4070
Pressure	-1.2368	1.3099	.2947	- .4788
Conflict of Interest	1.0752	1.0450	-1.0413	- .8710
Lack Help	- .3233	.0542	-1.2981	1.4793
Nervousness	- .9623	1.6252	- .0412	.3210